

Preparation of dinitriles

Abstract

5 A process is described for preparing adiponitrile and methylglutaronitrile, characterized by the following process steps:

(a) reacting a reactant stream comprising pentenenitriles with hydrogen cyanide in the presence of at least one catalyst and of at least one promoter to obtain a reaction stream which comprises pentenenitriles, the at least one catalyst, catalyst degradation products, the at least one promoter, adiponitrile and methylglutaronitrile,

(b) distilling the reaction stream to obtain a stream 3 which is depleted in pentenenitriles and comprises the at least one catalyst, catalyst degradation products, the at least one promoter, adiponitrile and methylglutaronitrile as the bottom product and a stream 4 enriched in pentenenitriles as the top product,

(c) extracting the stream 3 using an extractant present in stream 5 to obtain a stream 6 enriched with extractant as the top product which comprises the catalyst, and a stream 7 depleted in extractant as the bottom product which comprises catalyst degradation products, the at least one promoter, pentenenitriles, adiponitrile and methylglutaronitrile,

(d) distilling the stream 6 to obtain a stream 8 comprising the catalyst as the bottom product and a stream 9 comprising the extractant as the top product,

(e) distilling the stream 7 to obtain a stream 10 as the bottom product which comprises catalyst degradation products, the at least one promoter, pentenenitriles, adiponitrile and methylglutaronitrile, and a stream 11 comprising the extractant as the top product,

(f) distilling the stream 10 to obtain a stream 12 as the bottom product which comprises catalyst degradation products, the at least one promoter, adiponitrile and methylglutaronitrile, and a stream 13 comprising pentenenitriles as the top product,

(g) distilling the stream 12 to obtain a stream 14 as the bottom product which comprises catalyst degradation products and the at least one promoter, and a stream 15 as the top product which comprises adiponitrile and methylglutaronitrile,

(h) distilling the stream 15 to obtain a stream 16 comprising adiponitrile as the bottoms and a stream 17 comprising methylglutaronitrile as the top product.